

IFWO

RAW SEQUENCE LISTING DATE: 08/26/2004 PATENT APPLICATION: US/10/766,993 TIME: 11:37:09

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3 <110> APPLICANT: Chang, Chia-Hwa
        Liu, Xiaowen
        Lewicki, John A.
        Xu, Qiang
        Osel, Inc.
9 <120> TITLE OF INVENTION: Surface Expression of Biologically Active Proteins in
        Bacteria
10
12 <130> FILE REFERENCE: 016976-000810US
14 <140> CURRENT APPLICATION NUMBER: US 10/766,993
15 <141> CURRENT FILING DATE: 2004-01-28
17 <150> PRIOR APPLICATION NUMBER: US 60/443,619
18 <151> PRIOR FILING DATE: 2003-01-29
                                                              (ps.6)
ENTERED
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22 <170> SOFTWARE: PatentIn Ver. 2.1
24 <210> SEQ ID NO: 1
25 <211> LENGTH: 1765
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54 Thr Ile Asn Gly Asn Gly His Arg Ile Asn Phe Ala Gly Tyr Ser Ile
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72 Leu 73 145	Asn	Asn	Met	Ser	Ile 150	Gly	Tyr	Asn	Leu	Val 155	Thr	Gly	Lys	Thr	Val 160
75 Lys 76	Phe	Asp	Ser	Gly 165	Asn	Thr	Thr	Phe	Asn 170	Val	Asp	Gly	Lys	Val 175	Thr
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81 Ala 82	Ser	Asn 195	Ser	Glu	Asn	Pro	Ser 200	Thr	Leu	Ile	Asn	Glu 205	Gly	Ala	Thr
84 Val 85	210					215					220				
87 Arg 88 225					230		,		_	235					240
90 Gly 91				245					250					255	
93 Ser 94		_	260			_		265	_				270		
96 Lys 97		275					280					285			
99	${ t Thr}$	Asn	Tvr.	Asn	Glv	Thr	Hic	Tvr	$\Delta 1 =$	Dro	Tla	Cor	Ι.Δ11	C1xr	Val.
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100 102 Gly	290 Pro)				295	5				300)	-		
100 102 Gly 103 305	Pro)				295 Al a	5				300 Lys)	-		
102 Gly 103 305 105 Let 106	Pro Ille) O Ile e Asn	Ser Asn	Ser Gly 325	Val 310 Ser	295 Ala Leu	Ser Thr	r Pro	Leu e Ile 330	Ser 315 Arg	300 Lys Asp	Glr. Thr	Thr	Val Lys 335	Ser 320 Lys
102 Gly 103 305 105 Let 106 108 Thi	Pro Ille) O Ile e Asn	Ser Asn Pro	Ser Gly 325 Leu	Val 310 Ser	295 Ala Leu	Ser Thr	Pro Ile	Leu 2 Ile 330 7 Asp	Ser 315 Arg	300 Lys Asp	Glr. Thr	Thr Ala	Val Lys 335 Ser	Ser 320 Lys
102 Gly 103 305 105 Let 106	Pro Ille) Ile Asn Val	Ser Asn Pro 340	Ser Gly 325 Leu	Val 310 Ser	295 Ala Leu Ser	Ser Thr	r Pro	Leu 2 Ile 330 7 Asp	Ser 315 Arg O	300 Lys Asp	Glr. Thr	Thr Ala Ser 350	Val Lys 335 Ser	Ser 320 Lys Asn
102 Gly 103 305 105 Let 106 108 Thi 109 111 Thi	Pro Ille Leu Thr	O Ile O Ile O Asm I Val I Leu 355	Pro 340 Lys	Ser Gly 325 Leu	Val 310 Ser Ile	295 Ala Leu Ser Val	Ser Ser Thr Met	Pro Fig. 11e Gly 345 W Ala	Leu 2 Ile 330 Asp	Ser 315 Arg Gly	300 Lys Asp Ser	Glr Thr Leu 365	Thr Ala Ser 350 Asp	Val Lys 335 Ser Ser)	Ser 320 S Lys Asn Gln
102 Gly 103 305 105 Let 106 108 Thi 109 111 Thi 112 114 Asp	Problem Ile	D Ile D Ile D Asm D Val D Leu D 355 B Ala	Pro 340 Lys	Ser Gly 325 Leu	Val 310 Ser Ile	295 Ala Leu Ser Val	Ser Ser Thr Met Gly 360	Pro Fig. 11e Gly 345 W Ala	Leu 2 Ile 330 Asp	Ser 315 Arg Gly	300 Lys Asp Ser Thr	Glr. Thr Leu 365	Thr Ala Ser 350 Asp	Val Lys 335 Ser Ser)	Ser 320 S Lys Asn Gln
102 Gly 103 309 105 Let 106 108 Thi 109 111 Thi 112 114 Asg	Problem Ilean Leur Throp Lys	Do Ile Asm Val Leu 355 Ala	Pro 340 Lys	Ser Gly 325 Leu Phe	Val 310 Ser Ile Ser	295 Ala Leu Ser Val Arc 375	Ser Thr Met Gly 360	Pro Ile Gly 345 Ala	Leu 2 Ile 330 Asp 6 Gly 7 Ile	Ser 315 Arg Gly Ala	300 Lys Asp Ser Thr	Glr Thr Leu 365 Ser	Thr Ala Ser 350 Asp	Val Lys 335 Ser) Leu	Ser 320 S Lys 5 Asn Gln D Leu
102 Gly 103 305 105 Let 106 108 Thi 109 111 Thi 112 114 Asg 115 117 Asg	Problem Proble	Do Ile Asm Val Leu 355 Ala	Pro 340 Lys	Ser Gly 325 Leu Phe	Val 310 Ser Ile Ser	295 Ala Leu Ser Val Arg 375 Trp	Ser Thr Met Gly 360	Pro Ile Gly 345 Ala	Leu 2 Ile 330 Asp 6 Gly 7 Ile	Ser 315 Arg Gly Ala	300 Lys Asp Ser Thr Pro 380	Glr Thr Leu 365 Ser	Thr Ala Ser 350 Asp	Val Lys 335 Ser) Leu	Ser 320 S Lys 5 Asn Gln D Leu
102 Gly 103 305 105 Let 106 108 Thi 109 111 Thi 112 114 Asg 115 117 Asg	Profited Pro	Do Ile Asn Val Leu 355 Ala	Pro 340 Lys Gly	Ser Gly 325 Leu Phe Thr	Val 310 Ser Ile Ser Phe Leu 390	295 Ala Leu Ser Val Arg 375 Trp	Met Gly 360 Tyr 6 Gly Gly	Pro Pro Ile Gly 345 Ala	Leu e Ile 330 Asp Garage Ile Ser	Ser 315 Arg OGly Ala Glu Gly 395	300 Lys Asp Ser Thr Pro 380 Thr	Glr Thr Leu 365 Ser	Thr Ala Ser 350 Asp Thr	Val Lys 335 Ser Det Det Pro	Ser 320 Eys 5 Asn Gln Leu 400
102 Gly 103 305 105 Let 106 108 Thr 109 111 Thr 112 114 Asg 115 117 Asg 118 385 120 Phe	Prof.	Do Ile Asm Val Leu 355 Ala Do Leu	Pro Gly Val	Ser Ser Gly 325 Leu Phe Thr Thr Ala	Val 310 Ser Ile Ser Phe Leu 390 Tyr	295 Ala Leu Ser Val Arg 375 Trp	Gly Tyric Gly Asr	r Pro c Ile c Gly 345 7 Ala 7 7 7 7 7 8 7 8 8 9 8 9 9 9 9 9 1 1 1 1 1 1 1 1 1 1 1	Leu 2 Ile 330 7 Asp 3 Gly 7 Ile 5 Ser 410	Ser 315 Arg O Gly Ala e Glu Gly 395 Arg	300 Lys Asp Ser Thr Pro 380 Thr	Glr. Thr Leu 365 Ser Asp	Thr Ala Ser 350 Asp Thr Leu	Value	Ser 320 Lys Asn Gln Leu 400 Arg
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102 Gly 103 305 105 Let 106 108 Thr 109 111 Thr 112 114 Asg 115 117 Asg 118 385 120 Pho 121 123 Gly 124	Prof. Thr. Leur Thr. 370 Gly Gly Thr.	Do Ile Asm Val Leu 355 Ala V Leu Thr	Pro Gly Val Pro Ile 420	Ser Gly 325 Leu Phe Thr Thr Ala 405	Val 310 Ser Ile Ser Phe Leu 390 Tyr	295 Ala Leu Ser Val Arg 375 Trp Val	Ser Ser Thr Met Gly 360 Tyr Gly Asr	Property Pro	Leu He Ile He 330 Asp He Gly He Ser He Glr He Tyr	Ser 315 e Arg o Gly v Ala e Glu f Gly 395 a Arg	Asp Ser Thr Pro 380 Thr Thr	Glr. Thr Leu 365 Ser Asp	Thr Ala Ser 350 Asp Thr Leu Asp	Value	Ser 320 Lys Can Asn Gln Leu 400 Arg
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142			515					520					525	-		
	Asn	Phe		Phe	Trp	Ara	Pro		Ara	Met	Ala	Met		Ser	Lvs	Len
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	545					550	-1-				555		275	-1-		560
		Ala	Gln	Thr	Tle		Glv	Thr	Thr	Ara		Thr	Len	Ser	Asp	
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	Asn	Δla	Asn	Lys		Len	Lvs	Asn	T.e.11		Glv	Pro	Δsn	Glu	-	Pro
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	Ala	Thr		Lys	Asp	Glu	Trn		Lvs	Tle	Met	Tle		Pro	Thr	Asn
160		610	1101	-,0	1100	O_u	615	11011	_,		1100	620	0111			110p
	Ser		Asn	Pro	Ser	Δla		Val	Pro	Tur	Pro		Pro	Gln	Δcn	Pro
	625		тыр	110	DCI	630	9	vai	110	- y -	635	Oru	110	OIII	11011	640
		Glv	Asn	Leu	Lvs		Thr	Asn	Glv	Phe		Trn	Δla	Lvc	Val	
166		OI,	11011		645		1111	2101	O ± y	650	111u	111	71±u	шуы	655	
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169	-1-		1100	660	001	• • • •	1100		665	-,0			Lea	670	• • • •	****
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172	52 u	-10	675	-1-		O_u	014	680			001	- 1 -	685	011	• • • •	DUL
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175		690	0		-10	201	695		·ul	пор		700			1100	010
	Asn		Lvs	Ala	Ala	Asp		Pro	Ala	Glv	Thr		Tvr	Thr	Ala	Glv
	705	E	-1-			710					715		-1-			720
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		Ala	Val	Asp	Pro		Ala	Ala	Ala	Asp		Pro	Glu	Glv	Ala	
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202	- T.		835		- T-		- 1	840					845	- 1	2	
	Ala	Thr		Gly	Ser	Phe	Glu		Pro	Val	Lvs	Val		Tvr	Ser	Asp
205		850		1			855				1 -	860		<i>x</i> -		. 15
	Glv		Tvr	Ala	Glu	Val		Val	Pro	Val	Ser		Thr	G] v	Asn	Lvs
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Output Set: N:\CRF4\08262004\J766993.raw

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	Ala L		Glv	Ser			Glu	Tvr	Thr			Sar	₩.	Thr	Gly
	1345	, 5 1111	OL y		1350	OIU	Olu	1 Y L		1355	FIO	261	vai		1360
	Tyr T	ır Pro	Ser			Lve	Val	Glu			Thr	Val	Thr		
301		11 110		1365	mu	Бую	Vai		1370	цуз	1111	vai		1375	GIU
	Thr G	lu Ala			Val	Thr	тlа			Thr	Lvc	Λαn			Tlo
304	1111 0		1380	OCI	vai	1111		1385		1111	пуъ		1390	АБР	TIE
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307		1395		пур	FIO		1400	Asp	Gry	vai		45p 1405	Ald	TIE	ASII
	Arg T			Ara	Thr			17-1	Tara	C1			T	c1	Davie
310			1111	Arg		1415	TIE	vai	пур		1420	GIY	ьуѕ	GIU	PLO
	Gln T		Thr	Gln			uia	Dho	The			7. ~~~	T	7	01
	1425	II IIC	1111		1430	vai	птъ	Pne			GIU	Asp	ьуѕ		
	Asn Se	ar Gly	Tur			Dro	Wa I	Thr		L435	т1.	Trra	TT= +=0		1440
316	71011 00	or ory		1445	льр	FIO	vai		1450	GIU	116	цув		455 L455	TIIL
	Asp T	n Hie			Sar	λcn	Lou			T ***	Thr	C1			~1
319	1100 1		1460			дал		1465	AIA	пуъ	1111		1470	пр	GIU
	Glu Ty									_				_	
					SAY	V/al	Thr	C137	Trr	Thr	Dro	Cor	Cln	707	Tita
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322 324 325 ·327 328 330 331 333 334	Val Gi 149 Ile Se 1505 Asn Ly	1475 u Ala 00 er Tyr vs Asp	Lys Thr Met Gly 1540	Thr Lys Tyr 1525 Lys	Val Asn 1510 Arg	Thr 1495 Ala Glu Ser	1480 Ala Asp Val Thr	Glu Ile Thr Ser	Thr Pro Arg 1530 Val	Glu Val 1515 Thr	Ala 1500 Pro Ile Thr	Ala Phe Asn Ala	Ser Asp Val Lys	Val Pro 1 Val 535 Phe	Thr Ser 1520 Asp
322 324 325 327 328 330 331 333 334 336	Val Gi 149 Ile Se 1505 Asn Ly	1475 u Ala 00 er Tyr vs Asp e Thr u Asp	Lys Thr Met Gly 1540	Thr Lys Tyr 1525 Lys	Val Asn 1510 Arg	Thr 1495 Ala Glu Ser Asn	Asp Val Thr Ala	Glu Ile Thr Ser	Thr Pro Arg 1530 Val	Glu Val 1515 Thr	Ala 1500 Pro Ile Thr	Ala Phe Asn Ala Pro	Ser Asp Val Lys	Val Pro 1 Val 535 Phe	Thr Ser 1520 Asp
322 324 325 327 328 330 331 333 334 336 337	Val Gi 149 Ile Se 1505 Asn Ly Pro Il	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555	Lys Thr Met Gly 1540 Lys	Thr Lys Tyr 1525 Lys Asn	Val Asn 1510 Arg Ile Ser	Thr 1495 Ala Glu Ser Asn	Asp Val Thr Ala	Glu Ile Thr Ser 1545 Gly	Thr Pro Arg 1530 Val Tyr	Glu Val 1515 Thr Gln	Ala 1500 Pro Ile Thr	Ala Phe Asn Ala Pro	Asp Val Lys 1550 Val	Val Pro Val Val 535 Phe Thr	Thr Ser 1520 Asp Thr
322 324 325 327 328 330 331 333 334 336 337 339	Val Gi 149 Ile Se 1505 Asn Ly Pro Il Arg Gi	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555 er Thr	Lys Thr Met Gly 1540 Lys	Thr Lys Tyr 1525 Lys Asn	Val Asn 1510 Arg Ile Ser	Thr 1495 Ala Glu Ser Asn Trp	Asp Val Thr Ala	Glu Ile Thr Ser 1545 Gly	Thr Pro Arg 1530 Val Tyr	Glu Val 1515 Thr Gln Thr	Ala 1500 Pro Ile Thr Asp	Ala Phe Asn Ala Pro	Asp Val Lys 1550 Val	Val Pro Val Val 535 Phe Thr	Thr Ser 1520 Asp Thr
322 324 325 327 328 330 331 333 334 336 337 339 340	Val Gi 149 Ile Se 1505 Asn Ly Pro Il Arg Gi Lys Th	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555 er Thr	Lys Thr Met Gly 1540 Lys Met	Thr Lys Tyr 1525 Lys Asn Asn	Val Asn 1510 Arg Ile Ser Pro	Thr 1495 Ala Glu Ser Asn Trp	Asp Val Thr Ala L560 Thr	Glu Ile Thr Ser 1545 Gly Pro	Thr Pro Arg 1530 Val Tyr Ala	Glu Val 1515 Thr Gln Thr	Ala 1500 Pro Ile Thr Asp Gln	Phe Asn Ala Pro S65 Gly	Ser Asp Val Lys 1550 Val Leu	Val Pro Val 535 Phe Thr	Thr Ser 1520 Asp Thr Gly Ala
322 324 325 327 328 330 331 333 334 336 337 339 340 342	Val Gi 149 11e Se 1505 Asn Ly Pro II Arg Gi Lys Th 157 Val As	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555 er Thr	Lys Thr Met Gly 1540 Lys Met	Thr Lys Tyr 1525 Lys Asn Asn Gln	Val Asn 1510 Arg Ile Ser Pro	Thr 1495 Ala Glu Ser Asn Trp	Asp Val Thr Ala L560 Thr	Glu Ile Thr Ser 1545 Gly Pro	Thr Pro Arg 1530 Val Tyr Ala Val	Val Val 1515 Thr Gln Thr Lys	Ala 1500 Pro Ile Thr Asp Gln	Phe Asn Ala Pro S65 Gly	Ser Asp Val Lys 1550 Val Leu	Val Pro Val 535 Phe Thr Arg	Thr Ser 1520 Asp Thr Gly Ala Asn
322 324 325 327 328 330 331 333 334 336 337 339 340 342 343	Val Gi 149 Ile Se 1505 Asn Ly Pro Il Arg Gi Lys Th 157 Val As 1585	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555 er Thr 0 en Val	Lys Thr Met Gly 1540 Lys Met Glu	Thr Lys Tyr 1525 Lys Asn Asn Gln	Val Asn 1510 Arg Ile Ser Pro Ile	Thr 1495 Ala Glu Ser Asn Trp L575 Lys	Asp Val Thr Ala S60 Thr	Glu Ile Thr Ser 1545 Gly Pro Tyr	Thr Pro Arg 1530 Val Tyr Ala Val	Val Val IS15 Thr Gln Thr Lys Ala	Ala 1500 Pro Ile Thr Asp Gln 1580 Lys	Phe Asn Ala Pro S65 Gly Val	Asp Val Lys 1550 Val Leu Asp	Val Pro Val S35 Phe Thr Arg Gly	Ser 1520 Asp Thr Gly Ala Asn
322 324 325 327 328 330 331 333 334 336 337 339 340 342 343 345	Val Gi 149 11e Se 1505 Asn Ly Pro II Arg Gi Lys Th 157 Val As	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555 er Thr 0 en Val	Lys Thr Met Gly 1540 Lys Met Glu Val	Thr Lys Tyr 1525 Lys Asn Asn Gln Val	Val Asn 1510 Arg Ile Ser Pro Ile	Thr 1495 Ala Glu Ser Asn Trp L575 Lys	Asp Val Thr Ala S60 Thr	Glu Ile Thr Ser 1545 Gly Pro Tyr Asp	Thr Pro Arg 1530 Val Tyr Ala Val Ser	Val Val IS15 Thr Gln Thr Lys Ala	Ala 1500 Pro Ile Thr Asp Gln 1580 Lys	Phe Asn Ala Pro S65 Gly Val	Ser Asp Val Lys S50 Val Leu Asp	Val Pro Val 535 Phe Thr Arg Gly Val	Ser 1520 Asp Thr Gly Ala Asn
322 324 325 327 328 330 331 333 334 336 337 340 342 343 345 346	Val Gi 149 11e Se 1505 Asn Ly Pro II Arg Gi Lys Th 157 Val As 1585 Val As	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555 ir Thr 0 in Val	Lys Thr Met Gly 1540 Lys Met Glu Val	Thr Lys Tyr 1525 Lys Asn Asn Gln Val	Val Asn 1510 Arg Ile Ser Pro Ile 1590 Val	Thr 1495 Ala Glu Ser Asn Trp 1575 Lys	Asp Val Thr Ala S60 Thr Gly Pro	Glu Ile Thr Ser 1545 Gly Pro Tyr Asp	Thr Pro Arg 1530 Val Tyr Ala Val Ser 1610	Val Val 1515 Thr Gln Thr Lys Ala .595 Ala	Ala 1500 Pro Ile Thr Asp Gln 1580 Lys	Phe Asn Ala Pro S65 Gly Val	Ser Asp Val Lys S550 Val Leu Asp Val	Val Pro Val 535 Phe Thr Arg Gly Val 615	Thr Ser 1520 Asp Thr Gly Ala Asn .600 Thr
322 324 325 327 328 330 331 333 334 336 337 349 342 343 345 346 348	Val Gi 149 Ile Se 1505 Asn Ly Pro Il Arg Gi Lys Th 157 Val As 1585	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555 er Thr on Val ep Ala er Tyr	Lys Thr Met Gly 1540 Lys Met Glu Val Gln	Thr Lys Tyr 1525 Lys Asn Asn Gln Val	Val Asn 1510 Arg Ile Ser Pro Ile 1590 Val	Thr 1495 Ala Glu Ser Asn Trp 1575 Lys	Asp Val Thr Ala S60 Thr Gly Pro	Glu Ile Thr Ser 1545 Gly Pro Tyr Asp Glu	Thr Pro Arg 1530 Val Tyr Ala Val Ser 1610	Val Val 1515 Thr Gln Thr Lys Ala .595 Ala	Ala 1500 Pro Ile Thr Asp Gln 1580 Lys	Phe Asn Ala Pro S65 Gly Val Met Ile	Ser Asp Val Lys S50 Val Leu Asp Val Thr	Val Pro Val 535 Phe Thr Arg Gly Val 615	Thr Ser 1520 Asp Thr Gly Ala Asn .600 Thr
322 324 325 327 328 330 331 333 334 336 337 349 342 343 345 346 348 349	Val Gi 149 11e Se 1505 Asn Ly Pro II Arg Gi Lys Th 157 Val As 1585 Val As	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555 er Thr on Val ep Ala er Tyr	Lys Thr Met Gly 1540 Lys Met Glu Val Gln 1620	Thr Lys Tyr 1525 Lys Asn Asn Gln Val 1605 Ala	Val Asn 1510 Arg Ile Ser Pro Ile 1590 Val Asn	Thr 1495 Ala Glu Ser Asn Trp 1575 Lys Thr	Asp Val Thr Ala S60 Thr Gly Pro	Glu Ile Thr Ser 1545 Gly Pro Tyr Asp Glu 625	Thr Pro Arg 1530 Val Tyr Ala Val Ser 1610 Gly	Val Val IS15 Thr Gln Thr Lys Ala .595 Ala	Ala 1500 Pro Ile Thr Asp Gln 1580 Lys Asn	Phe Asn Ala Pro S65 Gly Val Met Ile	Ser Asp Val Lys S50 Val Leu Asp Val Thr 630	Val Pro Val 535 Phe Thr Arg Gly Val 615 Val	Thr Ser 1520 Asp Thr Gly Ala Asn 600 Thr
322 324 325 327 328 330 331 333 334 336 337 349 343 345 346 348 349 351	Val Gi 149 11e Se 1505 Asn Ly Pro II Arg Gi Lys Th 157 Val As 1585 Val As	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555 er Thr on Val ep Ala er Tyr p Thr	Lys Thr Met Gly 1540 Lys Met Glu Val Gln 1620	Thr Lys Tyr 1525 Lys Asn Asn Gln Val 1605 Ala	Val Asn 1510 Arg Ile Ser Pro Ile 1590 Val Asn	Thr 1495 Ala Glu Ser Asn Trp 1575 Lys Thr Lys	Asp Val Thr Ala S60 Thr Gly Pro Pro Ala	Glu Ile Thr Ser 1545 Gly Pro Tyr Asp Glu 625	Thr Pro Arg 1530 Val Tyr Ala Val Ser 1610 Gly	Val Val IS15 Thr Gln Thr Lys Ala .595 Ala	Ala 1500 Pro Ile Thr Asp Gln 1580 Lys Asn Asn	Phe Asn Ala Pro S65 Gly Val Met Ile Asn	Ser Asp Val Lys S50 Val Leu Asp Val Thr 630	Val Pro Val 535 Phe Thr Arg Gly Val 615 Val	Thr Ser 1520 Asp Thr Gly Ala Asn 600 Thr
322 324 325 327 328 330 331 333 334 336 337 349 343 345 348 349 351 352	Val Gi 149 11e Se 1505 Asn Ly Pro II Arg Gi Lys Th 153 Val As 1585 Val As Ile Th	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555 er Thr on Val ep Ala er Tyr p Thr 1635	Lys Thr Met Gly 1540 Lys Met Glu Val Gln 1620 Val	Thr Lys Tyr 1525 Lys Asn Asn Gln Val 1605 Ala Pro	Val Asn 1510 Arg Ile Ser Pro Ile 590 Val Asn Asp	Thr 1495 Ala Glu Ser Asn Trp 1575 Lys Thr Lys	Asp Val Thr Ala S60 Thr Gly Pro Pro Ala 640	Glu Ile Thr Ser 1545 Gly Pro Tyr Asp Glu 625 Asp	Thr Pro Arg 1530 Val Tyr Ala Val Ser 1610 Gly	Val Val I515 Thr Gln Thr Lys Ala 595 Ala Gln	Ala 1500 Pro Ile Thr Asp 1580 Lys Asn Asn Lys	Phe Asn Ala Pro S65 Gly Val Met Ile Asn Asn	Asp Val Lys Lou Asp Val Thr 630 Lys	Val Pro Val 535 Phe Thr Arg Gly Val 615 Val Asp	Ser 1520 Asp Thr Gly Ala Asn .600 Thr Lys
322 324 325 327 328 330 331 333 334 336 337 349 343 345 348 349 351 352	Val Gi 149 11e Se 1505 Asn Ly Pro II Arg Gi Lys Th 157 Val As 1585 Val As	1475 u Ala 00 er Tyr vs Asp e Thr u Asp 1555 er Thr 0 n Val ep Ala er Tyr p Thr 1635 o Asp	Lys Thr Met Gly 1540 Lys Met Glu Val Gln 1620 Val	Thr Lys Tyr 1525 Lys Asn Asn Gln Val 1605 Ala Pro	Val Asn 1510 Arg Ile Ser Pro Ile 1590 Val Asn Asp	Thr 1495 Ala Glu Ser Asn Trp 1575 Lys Thr Lys	Asp Val Thr Ala S60 Thr Gly Pro Pro Ala 640	Glu Ile Thr Ser 1545 Gly Pro Tyr Asp Glu 625 Asp	Thr Pro Arg 1530 Val Tyr Ala Val Ser 1610 Gly	Glu Val IS15 Thr Gln Thr Lys Ala S95 Ala Gln Ile	Ala 1500 Pro Ile Thr Asp 1580 Lys Asn Asn Lys	Phe Asn Ala Pro S65 Gly Val Met Ile Asn Asn	Asp Val Lys Lou Asp Val Thr 630 Lys	Val Pro Val 535 Phe Thr Arg Gly Val 615 Val Asp	Ser 1520 Asp Thr Gly Ala Asn .600 Thr Lys

RAW SEQUENCE LISTING ERROR SUMMARY

DATE: 08/26/2004

PATENT APPLICATION: US/10/766,993

TIME: 11:37:10

Input Set : A:\-8-1.app

Output Set: N:\CRF4\08262004\J766993.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:9; Xaa Pos. 3

Seq#:29; Xaa Pos. 3

Seq#:30; Xaa Pos. 3

Seq#:31; Xaa Pos. 3,6

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/766,993

DATE: 08/26/2004 TIME: 11:37:10

Input Set : A:\-8-1.app

L:1221	M:341	W:	(46)	"n"	or	"Xaa"	used,	for	SEQ	ID#:9	after p	os.:0
L:1527	M:341	W:	(46)	"n"	or	"Xaa"	used,	for	SEQ	ID#:29	after	pos.:0
												pos.:0
L:1566	M:341	W:	(46)	"n"	or	"Xaa"	used,	for	SEQ	ID#:31	after	pos.:0